

## **REMARKS**

### **Amendments of Claims**

Prior to addressing any rejection raised in the outstanding Office Action, Applicants hereby summarize the claim amendments that have been made herein, as follows:

Claims 19 and 23 have been cancelled without prejudice.

Claim 1 has been amended to recite “separating sugars selected from the group consisting of monosaccharides, disaccharides, trisaccharides and oligosaccharides, corresponding sugar alcohols thereof, polyols and mixtures thereof from a solution containing the same.” Support for this claim amendment can be found on page 3, line 36, page 4, line 1, and page 5, lines 26-27 of the instant specification as well as claim 19 as originally filed in the present application.

Claim 2, which depends from claim 1, has been amended consistent with the changes made in claim 1.

Claim 16 has been amended to delete the term “alcohol.”

The remaining claims have been amended to remove multiple dependency and to correct certain informalities thereof.

No new matter is introduced by the above-described claim amendments.

### **Response to the Obviousness-Type Double Patenting Rejection**

In the March 10, 2006 Office Action, the Examiner raised an obviousness-type double patenting rejection against claims 1-3 and 5-11 as allegedly unpatentable over the claims of co-pending U.S. Patent Applications No. 10/373,476 (issued as U.S. Patent No. 7,009,076), 10/697,763 (issued as U.S. Patent No. 7,037,378), and 10/670,094.

In response, a terminal disclaimer in compliance with 37 CFR 1.321(c) is filed herewith, which overcomes the obviousness-type double patenting rejection.

#### **Response to the Objection to Claims 4 and 12-32**

As mentioned hereinabove, all the multiple dependent claims of the present application, including claims 4 and 12-32, have been amended herein to remove the multiple dependencies. Correspondingly, the Examiner's objection to claims 4 and 12-32 under 37 C.F.R. §1.75(c) for improper multiple dependency is overcome.

#### **Response to the §102(e) Rejection of Claims 1-3 and 5-11**

In the March 20, 2006 Office Action, the Examiner provisionally rejected claims 1-3 and 5-11 under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent Application No. 10/373,476, which was filed on February 25, 2003 and was issued on March 7, 2006 into United States Patent No. 7,009,076 to Paananen et al. (hereinafter "Paananen").

MPEP §706.02(b) has provided that a rejection based on 35 U.S.C. §102(e) can be overcome by, *inter alia*, perfecting a claim to a foreign priority filing date.

In this case, the present application claims priority under 35 U.S.C. §371 to International Patent Application No. PCT/FI03/00232, which in turn claims priority to Finland Patent Application No. 20020592 filed on March 27, 2002.

The certified foreign priority document has already been forwarded to the United States Patent and Trademark Office (USPTO) by the International Bureau of the World Intellectual Property Organization (WIPO) on September 27, 2004, and a copy of the certified foreign priority document is enclosed herewith for the Examiner's reference. The foreign priority

document, which is in English, describes and supports the claimed subject matter of the present application.

It is clear that Applicants have perfected a claim to the March 27, 2002 foreign priority filing date, which antedates the February 25, 2003 reference date of the Paananen patent under 35 U.S.C. §102(e).

Correspondingly, the Paananen patent is removed as prior art, and the §102(e) rejection against Claims 1-3 and 5-11, which was asserted on the basis of the Paananen patent, is overcome. Withdrawal thereof is respectfully requested.

#### **Response to the §102 or §103 Rejections of Claims 1-2**

In the March 10, 2006 Office Action, the Examiner rejected claims 1-2 under 35 U.S.C. §102(b) as allegedly anticipated by, and alternatively, under 35 U.S.C. §103(a) as allegedly obvious over, U.S. Patent No. 6,153,791 to Moore (hereinafter “Moore”).

Applicants respectfully traverse the Examiner’s rejection of claims 1-2, for the following reasons:

The disclosure of Moore relates to a process for purifying 2-keto-L-gulonic acid by passing an aqueous solution containing 2-keto-L-gulonic acid through a solid particulate material, which is preferably a weakly basic ion exchange resin.

From the background section of the Moore reference, it is clear that the object of the Moore invention is to remove acids from aqueous media (see Moore, column 1, line 58). The known processes have the disadvantages that the water content of the recovered 2-keto-L-gulonic acid tends to be too high, so that there remains a need for recovering 2-keto-L-gulonic acid from

aqueous solutions, such as fermentation broths, as substantially water-free (see Moore, column 2, lines 1-9).

In the working examples of the Moore reference, methanol is employed as the solvent (i.e., eluant), with the exception of Example 4, where water is used as the eluant. However, Example 4 further refers to Example 2, which states that before the elution is carried out, the resin is first washed with deionized water and then with anhydrous methanol. It can therefore be inferred that the purification process of Example 4 also uses methanol in the washing step that precedes the elution step.

Thus, Moore reference teaches only the purification of a sugar acid, i.e., 2-keto-L-gulonic acid, in a substantially water-free form from an aqueous solution using a weakly basic ion exchange resin; and an organic solvent (methanol) is required during the purification process disclosed by Moore.

In contrast, the amended claim 1 of the present application, from which claim 2 depends, positively recites a process of “separating sugars selected from the group consisting of monosaccharides, disaccharides, trisaccharides and oligosaccharides, corresponding sugar alcohols thereof, polyols and mixtures thereof from a solution containing the same” using a weakly basic anion exchange resin. Further, the process of the present application does not require an organic solvent (see the instant specification, page 8, lines 18-19, stating that the eluant is preferably water, and the examples provided in the instant specification use water as the eluant).

Therefore, the claimed process of the present application is not anticipated by Moore, because the 2-keto-L-gulonic acid disclosed by Moore is a sugar acid, which does not fall within the definition of the compounds to be separated by the claimed process of the present

application, i.e., sugars selected from mono-, di-, tri- or oligosaccharides, corresponding sugar alcohols, or polyols, as recited by the amended claims 1 and 2.

Further, since the Moore reference primarily teaches a process for separation of acids, specifically a sugar acid, in a substantially water-free form from an aqueous solution, it does not in any way provide motivation to one skilled in the art to use the same process for separating sugars, sugar alcohols, or polyols. Therefore, the claimed process of the present application as recited by the amended claims 1 and 2 is not obvious over the Moore reference.

#### **Response to §103(a) Rejection of Claims 1 and 2**

In the March 10, 2006 Office Action, the Examiner further rejected claims 1-2 under 35 U.S.C. §103(a) as allegedly obvious over Moore in view of Hackh's Chemical Dictionary and either U.S. Patent No. 5,126,500 to Von Deessen (hereinafter "Von Deessen") or U.S. Patent No. 6,599,722 to Boston (hereinafter "Boston").

The Examiner expressly conceded that the claims of the present application recite different materials to be separated and thus differ from the disclosure of Moore, but attempted to remedy this deficiency of Moore by reciting the Hackh's Chemical Dictionary and the Von Deessen and Boston references.

Hackh's Chemical Dictionary discloses on page 625 that sorbose is a carbohydrate.

Von Deessen relates to a process for preparing retinyl glycosides and intermediates thereof, and it specifically discloses at column 1, line 10 and column 4, line 65 to column 5, line 6 that 2-keto-L-gulonic acid is a carbohydrate.

Boston discloses processes for producing asorbic acid intermediates, and it specifically discloses at column 5, lines 41-42 that 2-keto-L-gulonic acid is a sugar acid.

The Examiner asserted in the outstanding Office Action that it would have been obvious that the recited materials are separated in light of the above-quoted disclosure by Hackh's Chemical Dictionary, Von Deessen, and Boston.

In response, Applicants have hereby amended claim 1, from which claim 2 depends, to delete the term "carbohydrate."

Consequently, the disclosure by Hackh's Chemical Dictionary and Von Deessen are no longer relevant to the claimed process of the present application.

The disclosure of Boston relates only to 2-keto-L-gulonic acid, which is a sugar acid and which still does not fall within the definition of the compounds to be separated by the claimed process of the present application, as explained hereinabove. Further, Boston relates to a synthesis process, not a separation process, and there is no motivation for a person ordinarily skilled in the art to combine the teachings of Boston with the teachings of Moore.

Therefore, Boston does not remedy the above-described deficiency of Moore and does support a *prima facie* case of obviousness against claims 1 and 2 of the present application.

#### **Response to §103 Rejection of Claims 3, 5, and 6-11**

In the outstanding Office Action, the Examiner rejected claims 3, 5 and 6-11 under 35 U.S.C. §103(a) as allegedly obvious over Moore in view of Hackh's Chemical Dictionary, Von Deessen and Boston, and further in view of:

- U.S. Patent No. 6,599,722 to Schoenrock (hereinafter "Schoenrock");
- U.S. Patent No. 6,224,683 to Tanikawa (hereinafter "Tanikawa");
- U.S. Patent No. 4,718,946 to Fries (hereinafter "Fries");
- U.S. Patent No. 4,145,486 to Haag (hereinafter "Haag");

- U.S. Patent No. 5,863,438 to Katzakian (hereinafter “Katzakian”); and/or
- U.S. Patent No. 4,051,221 to Pannekeet (hereinafter “Pannekeet”);

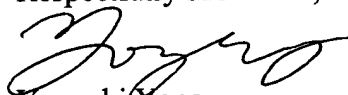
Claims 3, 5 and 6-11 depend from amended claim 1 and therefore incorporate all the limitations of amended claim 1 through such dependency. Correspondingly, claims 3, 5 and 6-11 patentably distinguish over the disclosure by Moore in view of Hackh’s Chemical Dictionary, Von Deessen and Boston, for the same reasons explained hereinabove for the amended claim 1.

The applied disclosures of the additional cited references, i.e., Schoenrock, Tanikawa, Fries, Haag, Katzakian, and Pannekeet, do not in any manner relates to separation of sugars, sugar alcohols, or polyols (see Office Action, page 5, lines 16-20, page 6, lines 17-19, page 7, lines 12-17, and page 8, lines 13-15). Therefore, such additional cited references, as applied by the Examiner in the outstanding Office Action, still do not remedy the above-described deficiency of Moore, Hackh’s Chemical Dictionary, Von Deessen and Boston.

Correspondingly, claims 3, 5 and 6-11 patentably distinguish all the cited references.

Based on the foregoing, claims 1-18, 20-22, and 24-32 as amended herein are in condition for allowance. Issuance of a Notice of Allowance for the application is therefore requested.

Respectfully submitted,

  
Yongzhi Yang  
Registration No. 56,310

Scully, Scott, Murphy & Presser, P.C.  
400 Garden City Plaza, Suite 300  
Garden City, New York 11530  
(516) 742-4343  
MY/vh